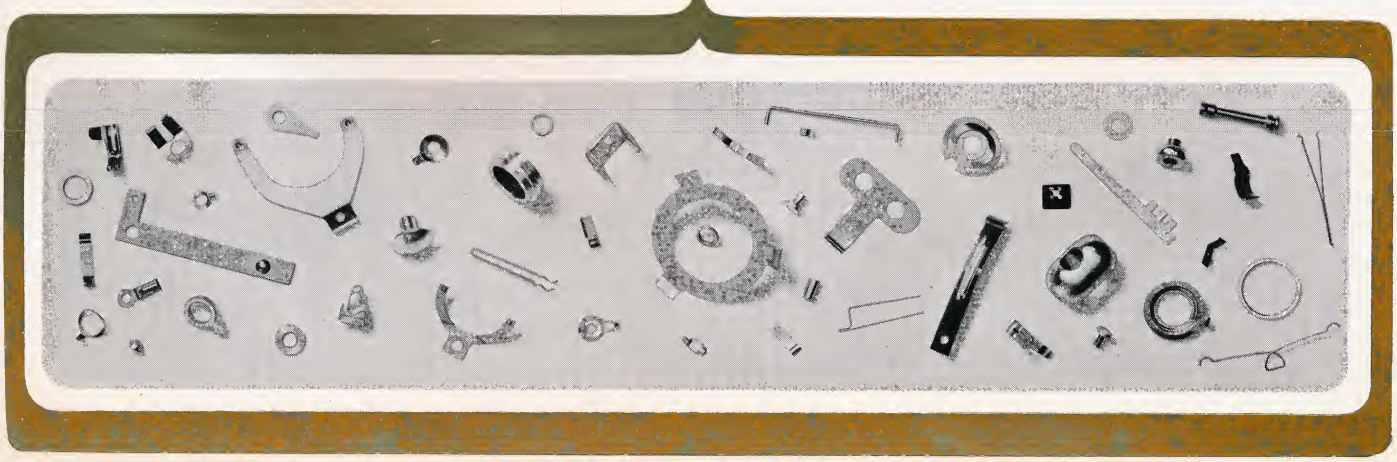
FROM MELTING POT TO FINISHED PART



LEACH & GARNER COMPANY

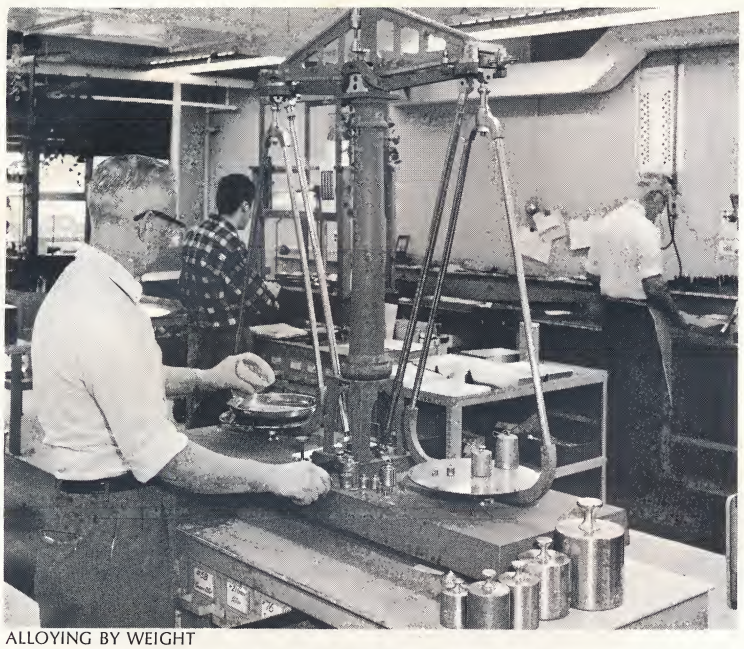
GENERAL FINDINGS INC.

In pictures and words this brochure summarizes the highly successful amalgamation of the talents and experience possessed by the Industrial Divisions of two long established concerns, Leach & Garner Company and General Findings Inc. Working together under one roof, these affiliates offer an unsurpassed degree of coordinated production, service and quality in the conversion of precious and non-precious metals . . . first to basic mill shapes and subsequently to precision miniature contact parts and fabrications . . . **from melting pot to finished part.**

Although completely independent identities are maintained, both Leach & Garner Company and General Findings Inc. are operated by the same owner-management. This unique owner-management is worthy of special mention in itself. Since the founding of Leach & Garner in 1899 and General Findings 15 years later in 1914, ownership has been perpetuated within the founding families. Their keen interest and day to day participation in the management of the two concerns has led to unparalleled personal attention to all customer requirements. In 1960 manufacturing facilities were opened in North Hollywood, California to manufacture small parts and distribute materials thus giving direct service to West Coast customers.

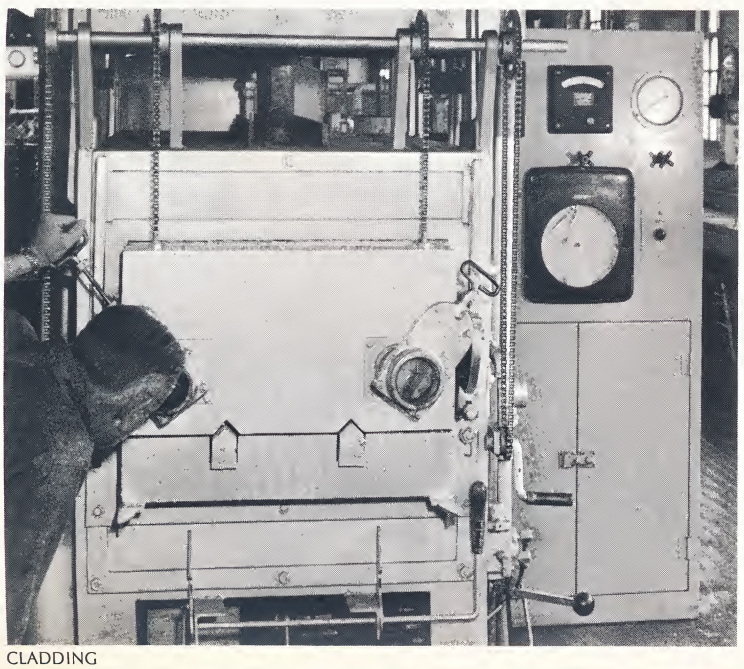
More than 100,000 square feet of manufacturing area housing over 500 employees.

LEACH & GARNER CO. Your pictorial tour of our operations begins at the melting pot. To insure soundness, molten metal precasting temperatures are pyrometer-checked before pouring of the melt within a protective atmosphere which prevents oxidation.



ALLOYING BY WEIGHT

PREPARATION FOR CLADDING



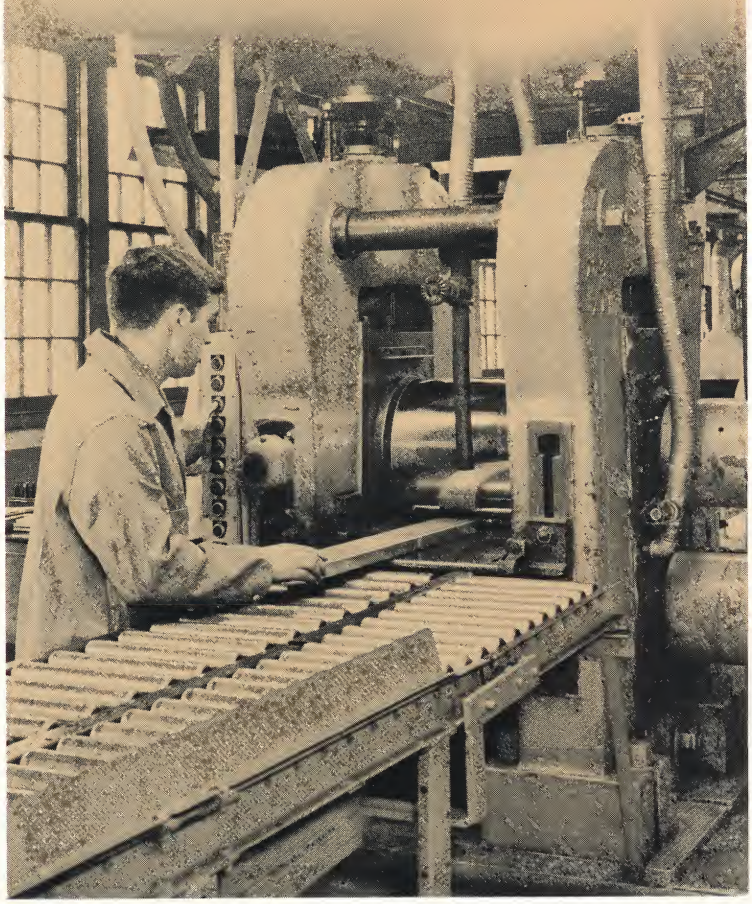
CLADDING

ALLOYING BY WEIGHT. On precision scales various precious and non-precious metals are combined by weight. A wide range of precious metal alloys are produced using scores of recorded formulas, many of which are the exclusive developments of L. & G.

PREPARATION FOR CLADDING. A thin layer of brazing alloy is placed between the precious metal top cladding and the base metal bar to which it will be permanently bonded. Laminated precious metals thus produced combine economy and the special physical advantages provided by a wide range of base metals.

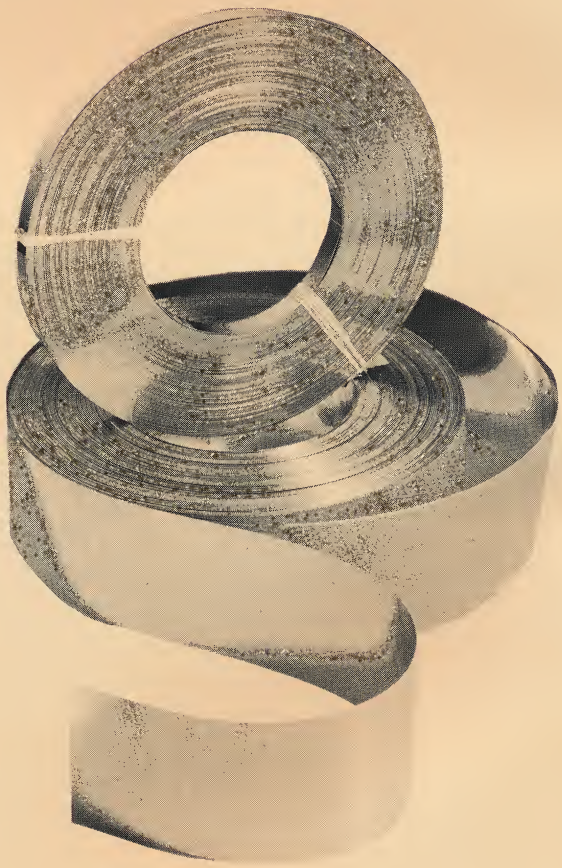
CLADDING. Assembled sandwiches are processed simultaneously in one of the specialized bonding furnaces where carefully calibrated instruments control elevated temperatures, pressure and time necessary to produce permanent metallurgical bonds.

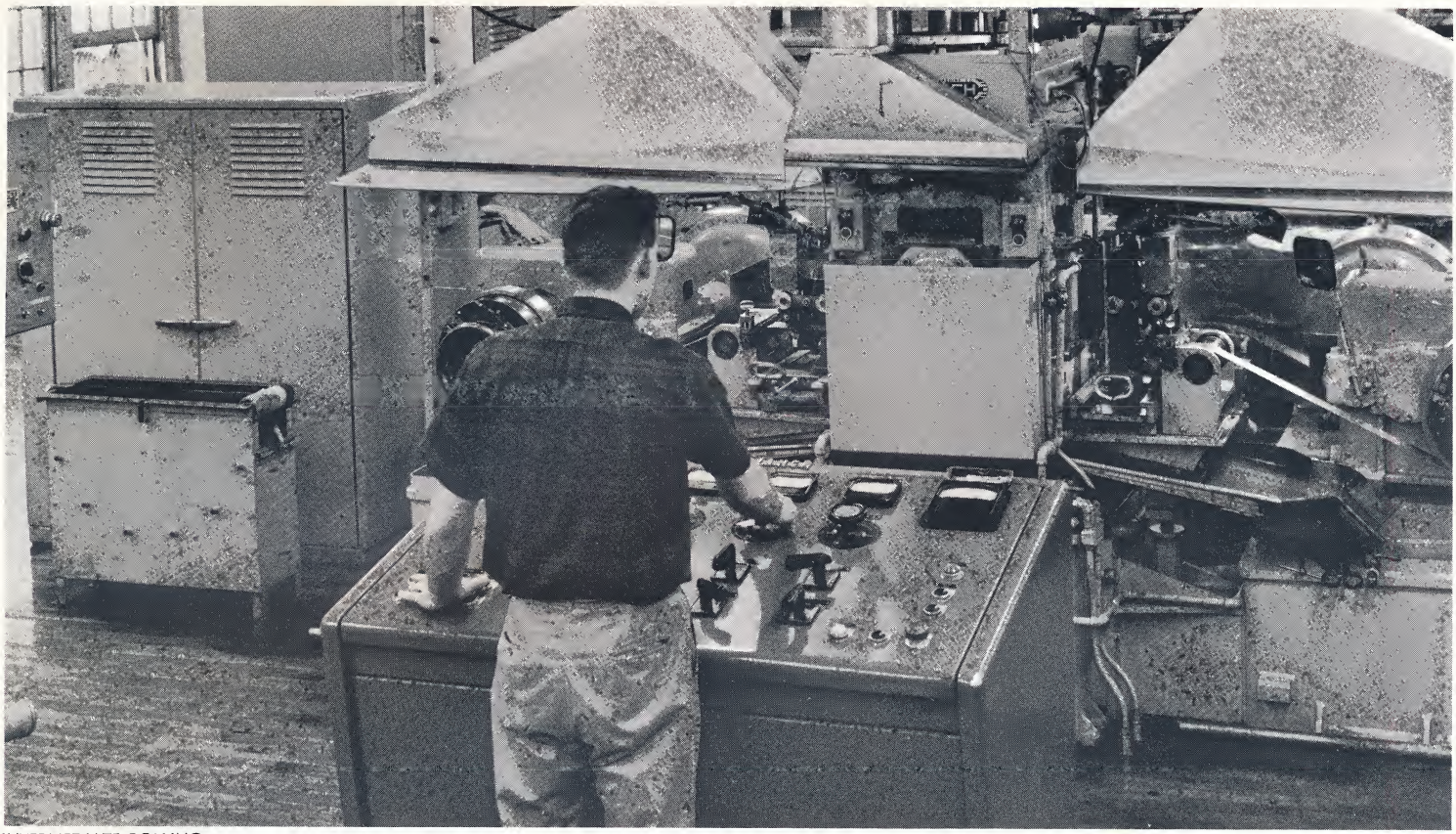
FLAT STOCK DEPARTMENT. Solid and laminated ingots start through huge breakdown mills on their way to becoming finished strip. Tremendous pressures force the metal ever thinner and longer producing bar stock for further processing.



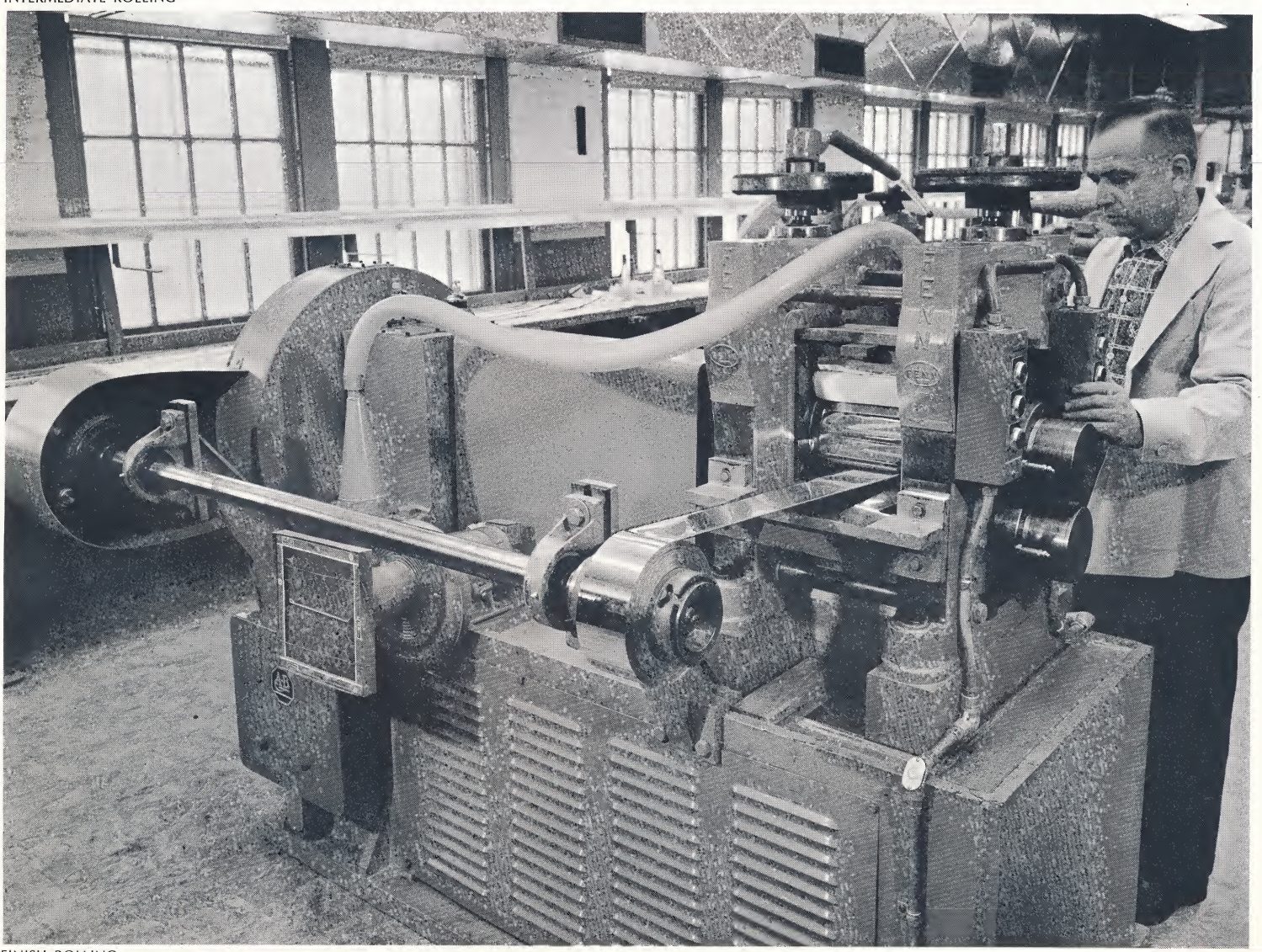
INTERMEDIATE ROLLING. At this point the rolling operations become automated. Flying micrometers electronically sense and correct thickness variations, producing tolerances of ±.00025 in gauges as thin as 5 mils at speeds up to 300 ft./minute.

FINISH ROLLING. Mirror finished rolls in specialized rolling mills produce the luster and brilliance so often required in precious metals. These rolls are frequently changed and refinished in a special department to insure the consistent production of optimum finishes.



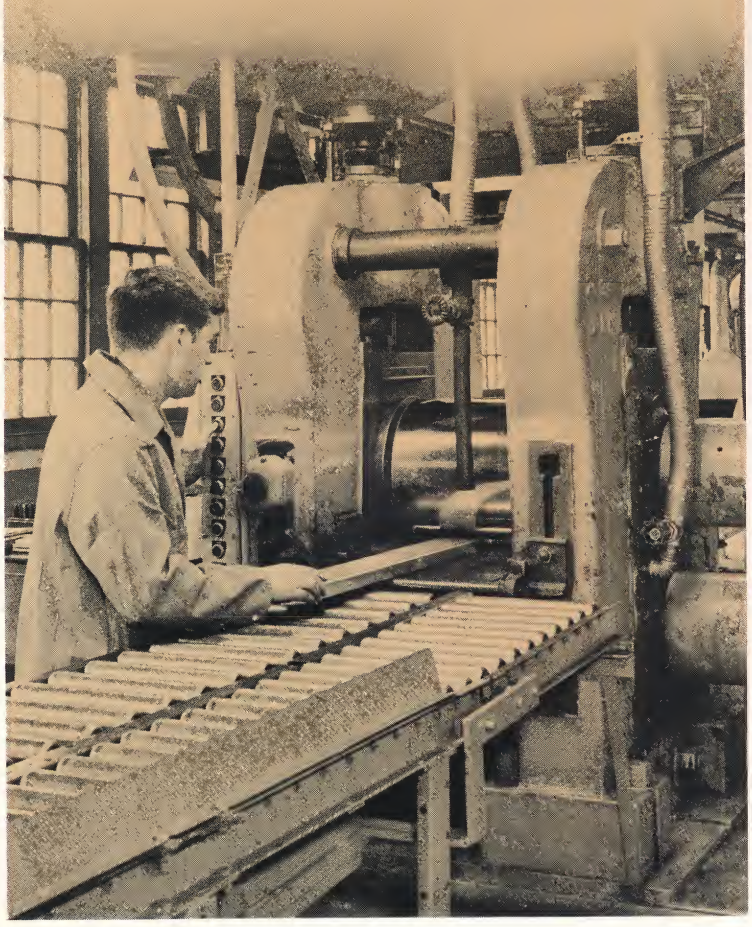


INTERMEDIATE ROLLING



FINISH ROLLING

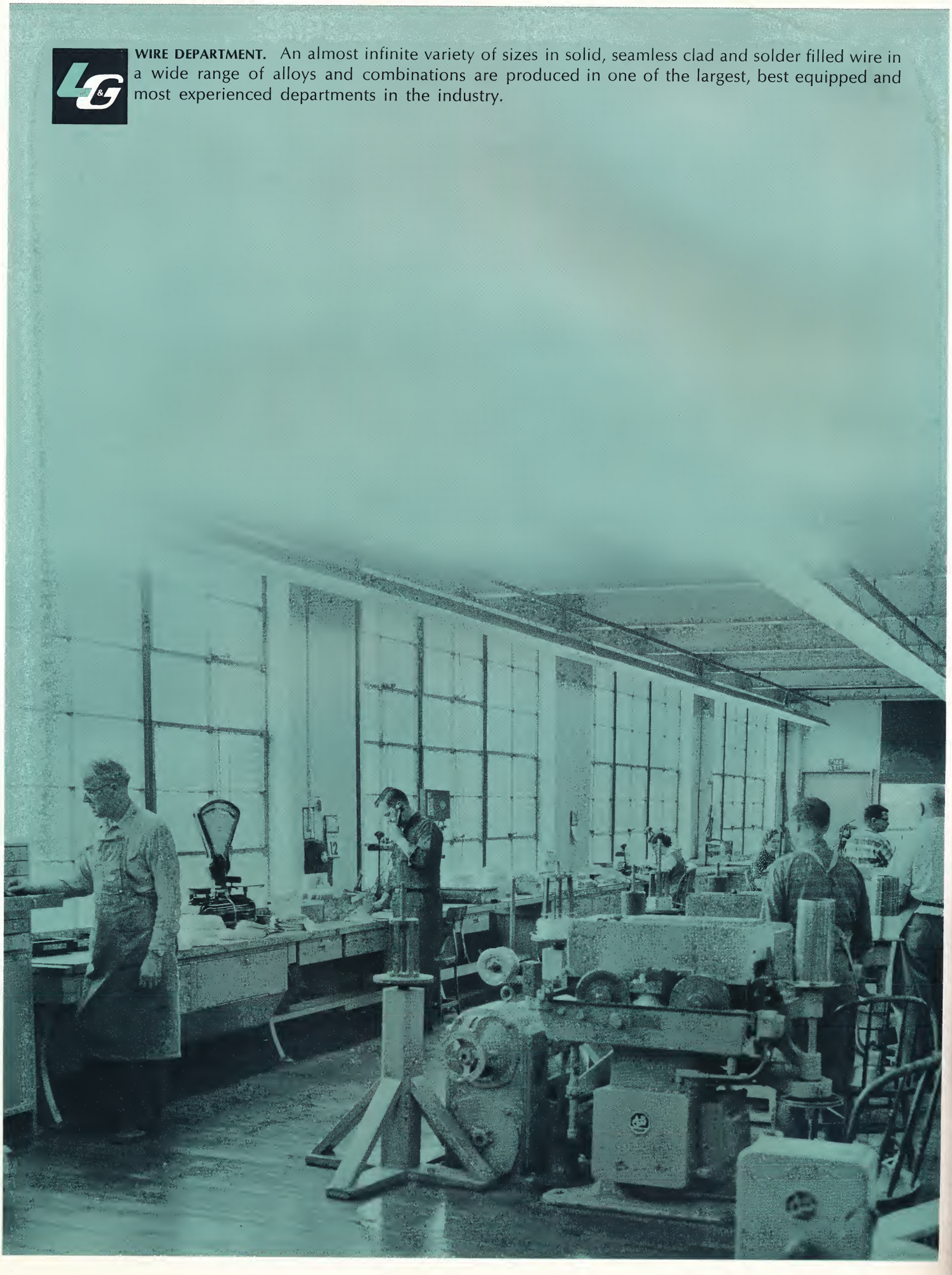
FLAT STOCK DEPARTMENT. Solid and laminated ingots start through huge breakdown mills on their way to becoming finished strip. Tremendous pressures force the metal ever thinner and longer producing bar stock for further processing.

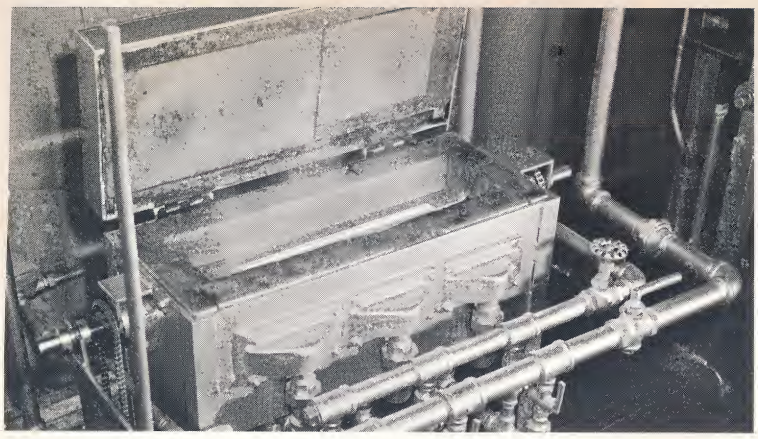


INTERMEDIATE ROLLING. At this point the rolling operations become automated. Flying micrometers electronically sense and correct thickness variations, producing tolerances of ±.00025 in gauges as thin as 5 mils at speeds up to 300 ft./minute.

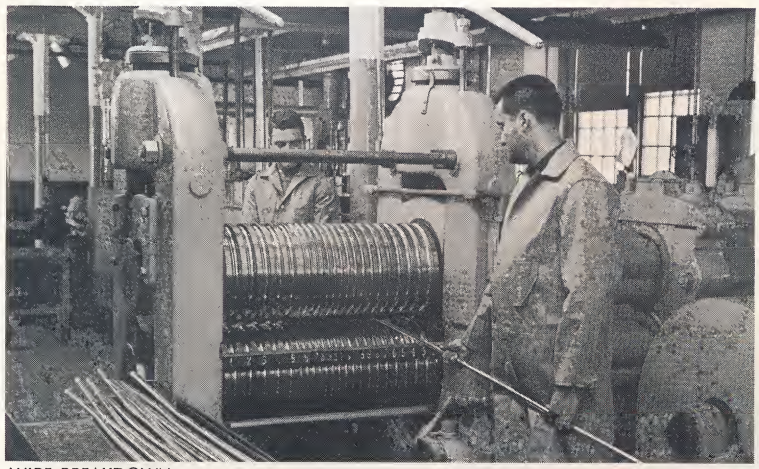
FINISH ROLLING. Mirror finished rolls in specialized rolling mills produce the luster and brilliance so often required in precious metals. These rolls are frequently changed and refinished in a special department to insure the consistent production of optimum finishes.

WIRE DEPARTMENT. An almost infinite variety of sizes in solid, seamless clad and solder filled wire in a wide range of alloys and combinations are produced in one of the largest, best equipped and most experienced departments in the industry.

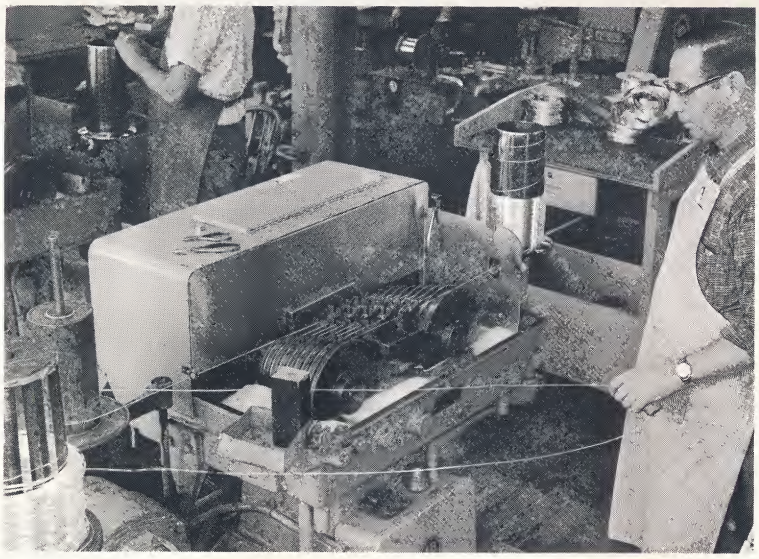




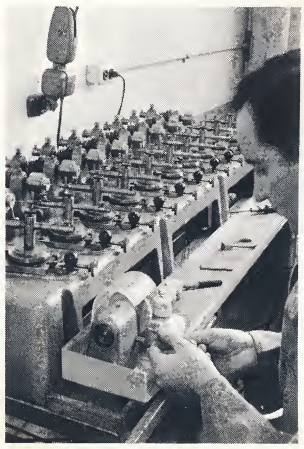
CLADDING WIRE



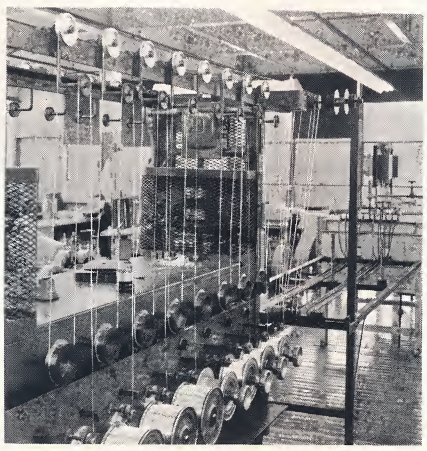
WIRE BREAKDOWN



WIRE DRAWING



DIE MAINTENANCE



STRAND ANNEALING

CLADDING WIRE. Precious metal seamless shells are furnace fused to base metal cores after careful mechanical and chemical cleaning of all component parts to insure uniform bonding in this first operation of the Wire Department.

WIRE BREAKDOWN. Bonded ingots are reduced by successive passes through the graduated grooves of tool steel rolls, then annealed and tandem rolled, or swaged, to sizes suitable for finished wire drawing machines.

WIRE DRAWING. Shown here are machines drawing finished wire through as many as eleven successively smaller diamond dies to produce final gauges as fine as .004".

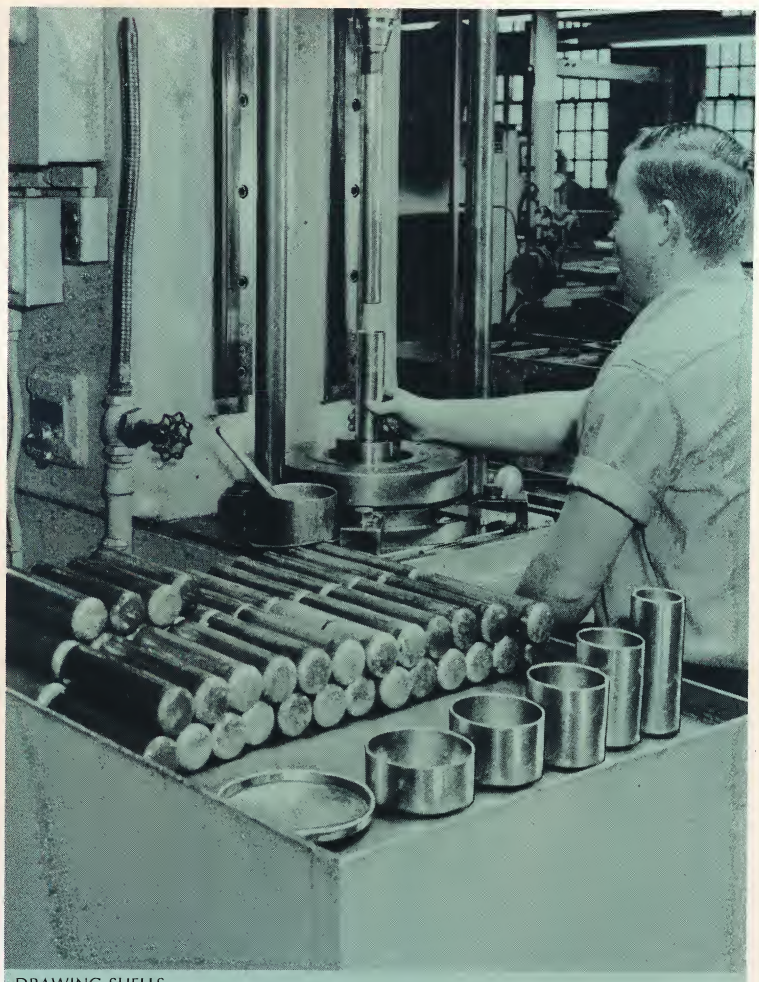
STRAND ANNEALING. For essential uniformity of temper, continuous single wire strands pass through protective gas atmospheres in pyrometrically controlled annealing furnaces. Final automatic spooling insures users of smooth, snag-free pay-off.

DIE MAINTENANCE. To assure perfect dimensional accuracy and a consistently uniform surface finish, diamond wire drawing dies are subjected to an intensive program of microscopic inspections, periodic cleaning and refinishing.

TUBING DEPARTMENT. Exceptional skill, modern equipment and laboratory control allow this department, one of the largest in the precious metal field, to produce a wide range of solid and laminated metal tubing to exacting tolerances and finish requirements. Intermediate and final annealing are pyrometrically controlled within the protective atmosphere of conveyer furnace equipment.

DRAWING SHELLS. Tubing is born as tons of hydraulic pressure form flat discs into successively deeper cup shapes which are deep drawn through a series of dies and plungers until the seamless shells reach the correct size for further reduction on tubing draw boards.

DRAWING TUBING. Skilled hands operate tubing draw boards where combinations of carbide dies and precision ground arbors produce accurate dimensions and high finish.



DRAWING SHELLS

DRAWING TUBING

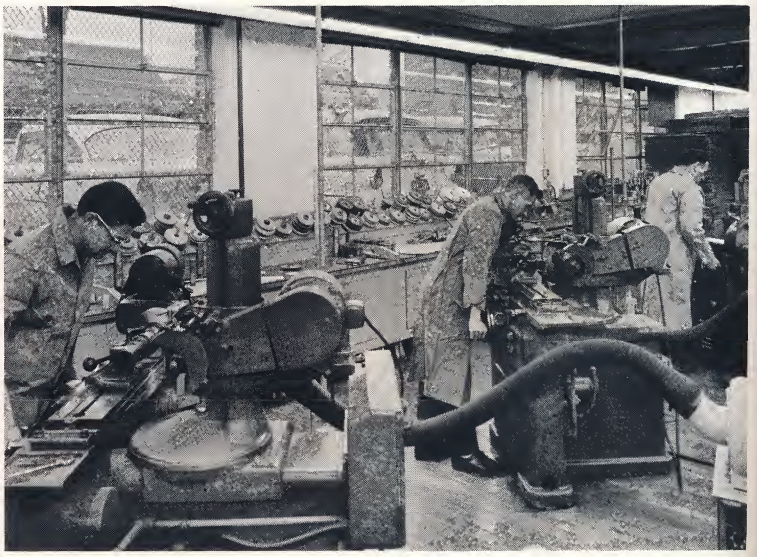
TOOL ROOM. This vital department, responsible for building and maintenance of equipment and tools, also designs and constructs specialized machinery for our own use.

ROLL FORMING SPECIAL SHAPES. Unique in this industry are special mills and equipment designed, engineered and built by our own group. Cold form rolling produces wrought structures to extremely close tolerances. Note in the background a few of the hundreds of custom made rolls maintained for special shapes.

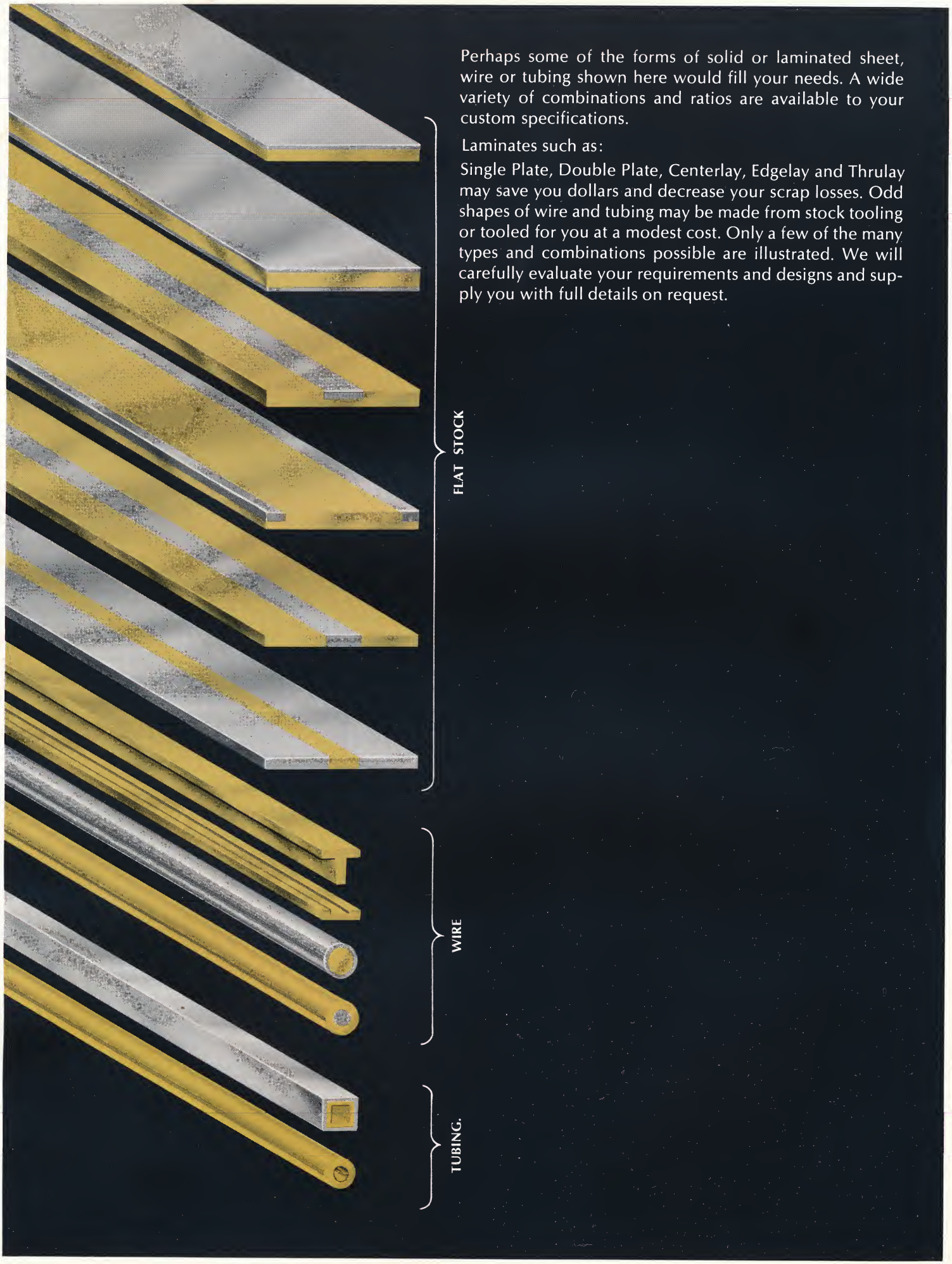
FORM GRINDING. A battery of microscopically calibrated circular form grinders combine with exceptional craftsmanship to produce the many roll forms required to meet the exacting specifications of our customers.

TOOL ROOM

ROLL FORMING SPECIAL SHAPES



FORM GRINDING

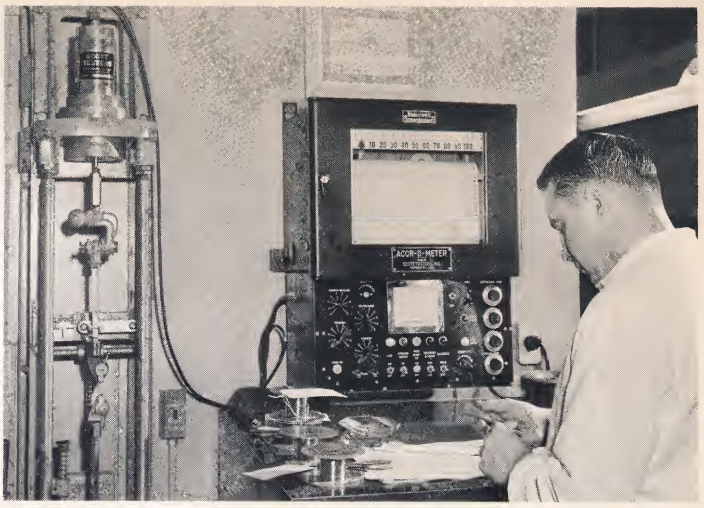


Perhaps some of the forms of solid or laminated sheet, wire or tubing shown here would fill your needs. A wide variety of combinations and ratios are available to your custom specifications.

Laminates such as:

Single Plate, Double Plate, Centerlay, Edgelay and Thrulay may save you dollars and decrease your scrap losses. Odd shapes of wire and tubing may be made from stock tooling or tooled for you at a modest cost. Only a few of the many types and combinations possible are illustrated. We will carefully evaluate your requirements and designs and supply you with full details on request.

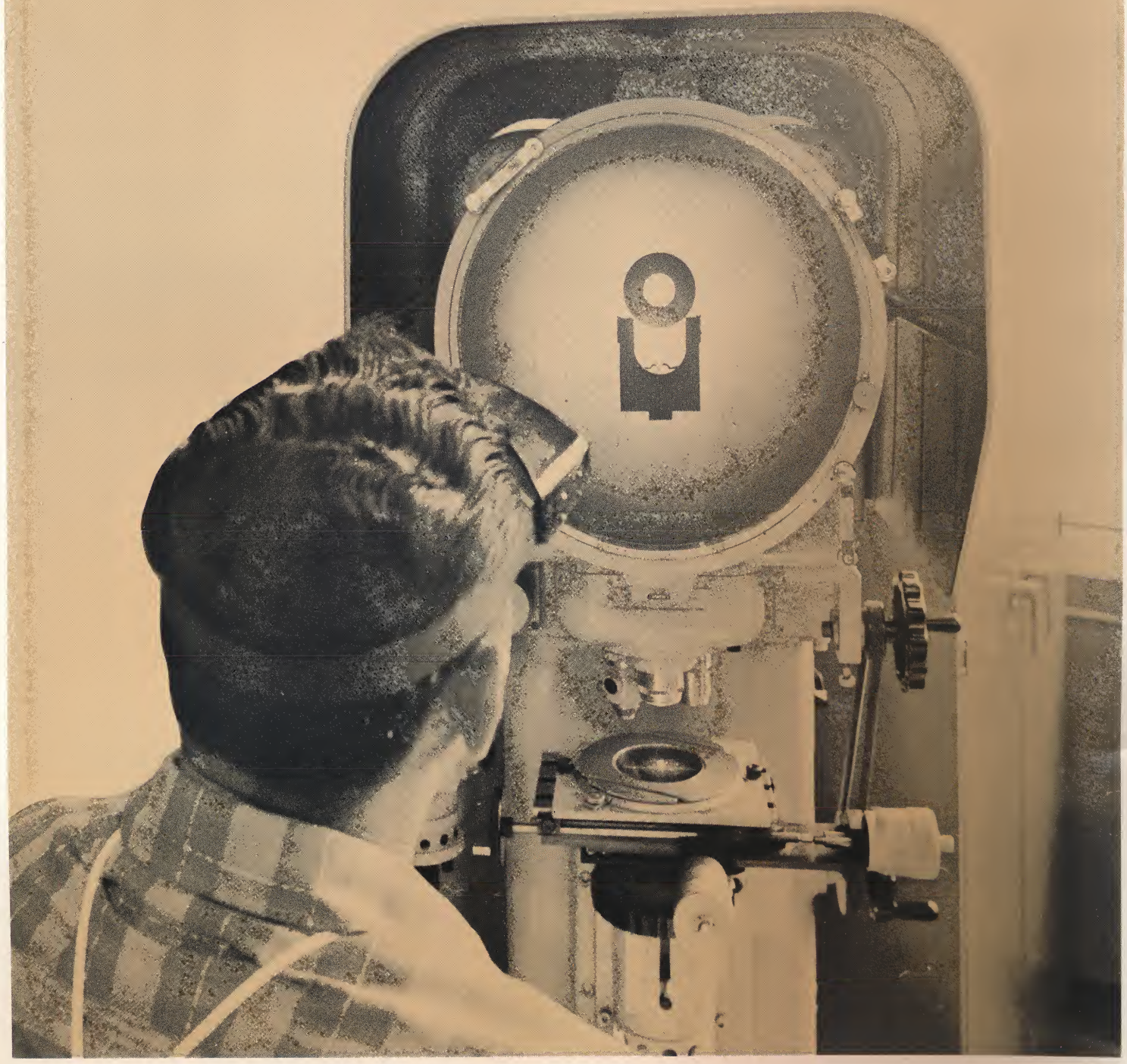
TECHNICAL FACILITIES. Engineering and Laboratory facilities for careful control of quality; physical and chemical requirements are at your service. Staffed with men of many years of experience, this function is a vital part of our operations. Quality is built in and carefully maintained. Constant checking with equipment, as shown in this brochure, is your assurance of the finest of materials and products.

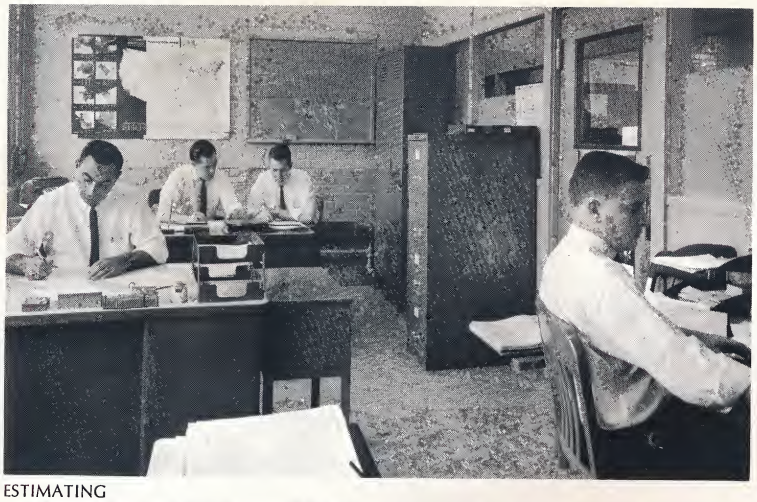


Symbolic of the close two-company cooperation are outstanding engineering and laboratory facilities jointly serving both companies. Our metallurgists, engineers and chemists assure rigid quality control, develop new applications, materials and provide customer assistance.

These technical resources are coordinated to follow material through the Leach and Garner Company and to provide metallurgical and engineering assistance to General Findings Inc., again assuring you of complete control . . . **from melting pot to finished part.**

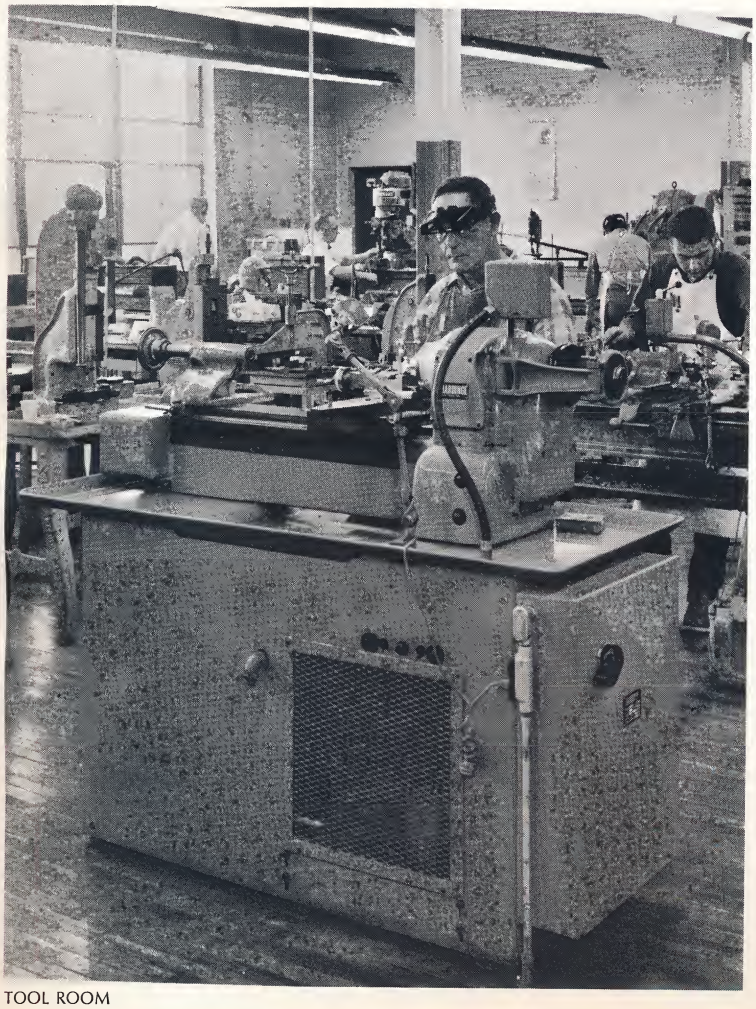
GENERAL FINDINGS INC. General Findings Inc. engages in custom fabrication of miniature solid and laminated precious metal contacts, utilizing wire, sheet and tubing. In addition, GF produces base metal fabrications. Shown is one of the many comparators used in General Findings to insure accuracy of both tools and parts. Only such precision aids as this comparator, light wave micrometers, Johansson gauge blocks and many other fine tools can hold the tolerances required by users of miniature contacts, brushes and fabricated parts.





ESTIMATING

TOOL LAYOUT AND DESIGN



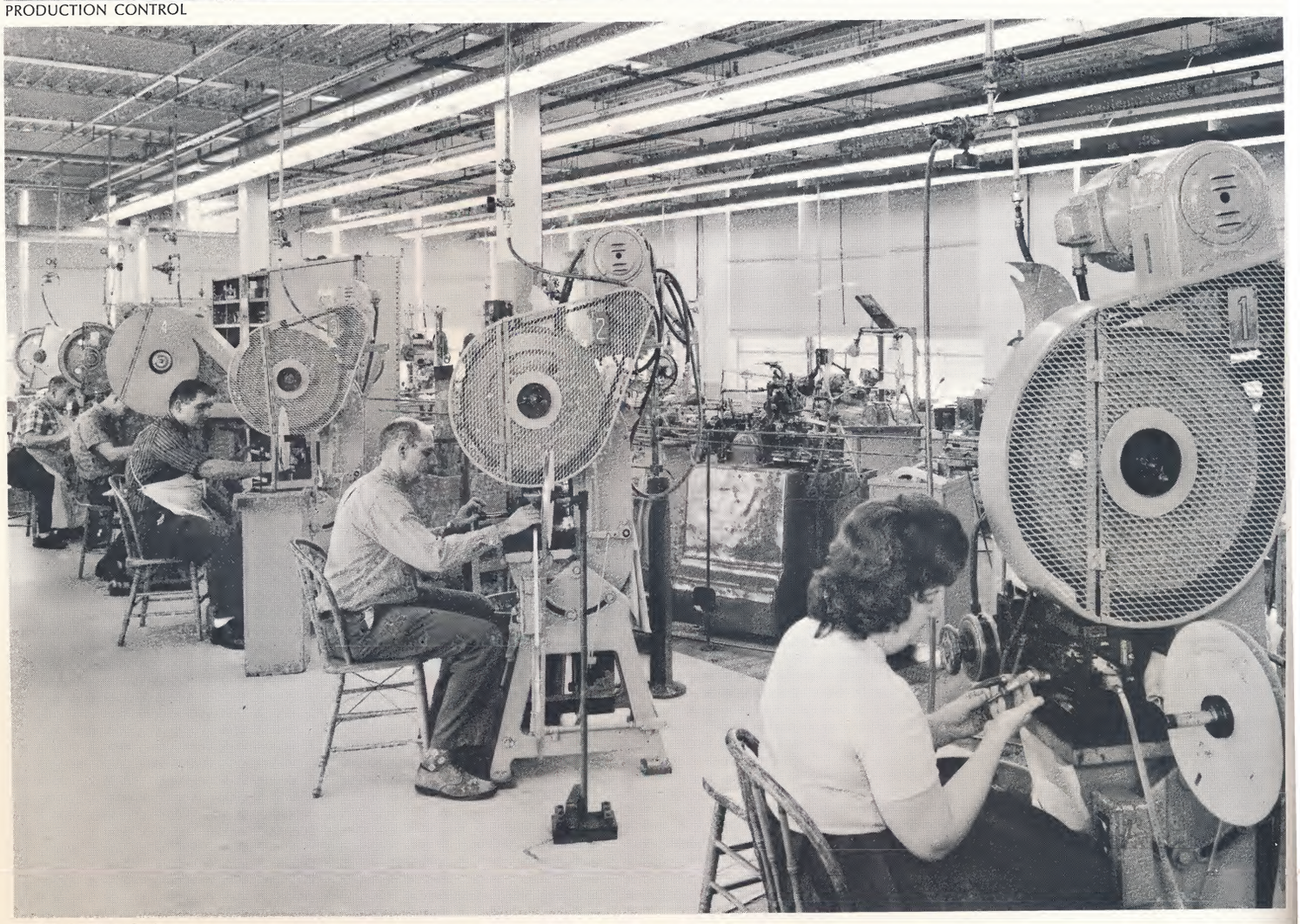
TOOL ROOM

ESTIMATING. Familiar with all phases of mill and parts production, experienced estimators analyze customer specifications to produce prompt, accurate estimates.

TOOL LAYOUT AND DESIGN. New England is famous for skilled craftsmen, especially toolmakers. Here, tool engineers and designers meticulously build intricate progressive tools that will produce outstanding finished parts.

TOOL ROOM. A completely integrated tool service is made possible by an extensive assortment of precision lathes, jig borers, milling machines and other specialized equipment.

PRODUCTION CONTROL



PRESS OPERATIONS

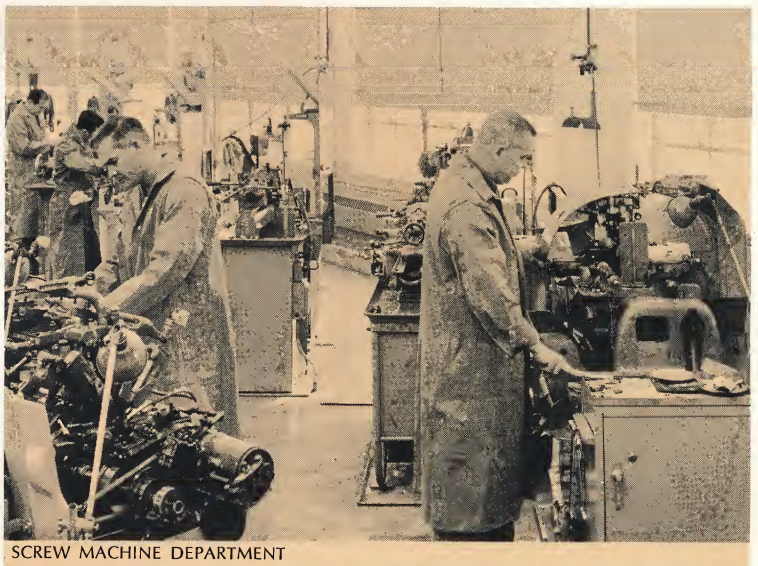
PRODUCTION CONTROL. In this efficient materials and parts *control center* so essential to customer satisfaction, the flow of orders in quantities from one to millions of units is recorded and scheduled.

SCREW MACHINE DEPARTMENT. Working with Brown & Sharpe #0, #00, Swiss Tornos #7 and hand screw machines to cut rings and machine bar stock, GF experts demonstrate the specialized knowledge of tool forms, speeds and feeds required in the microscopically precise machining of solid and laminated precious metals.

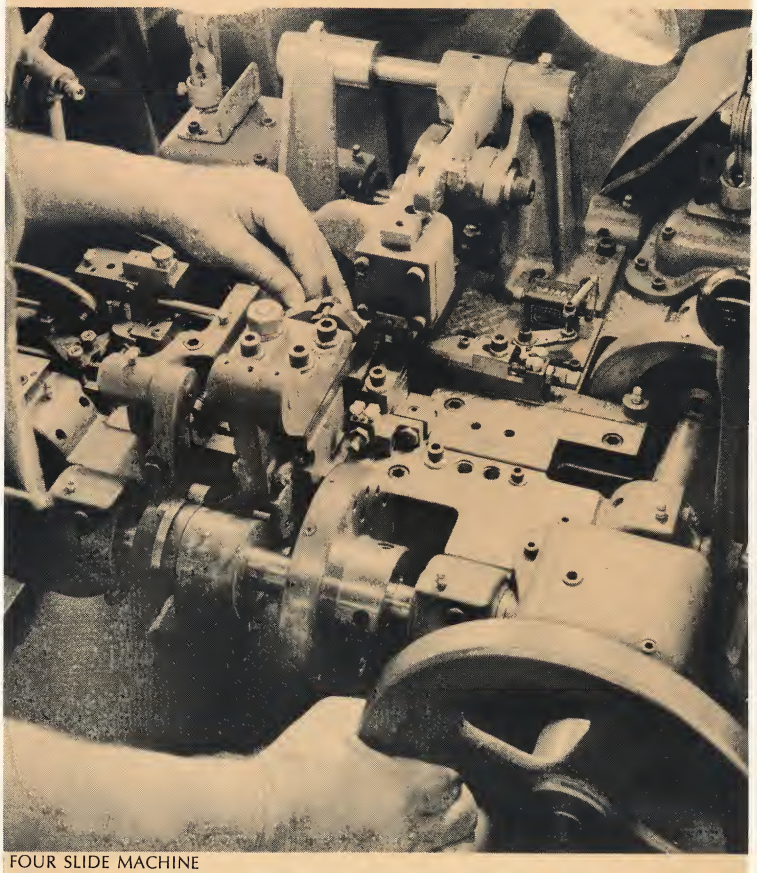
PRESS OPERATIONS. Press capacities ranging from three to thirty tons are available. Roll feeds and hitch feeds produce high speed blanking.

FOUR SLIDE MACHINE. A battery of these machines form complicated parts from wire and strip at rates of six to ten thousand pieces per hour.

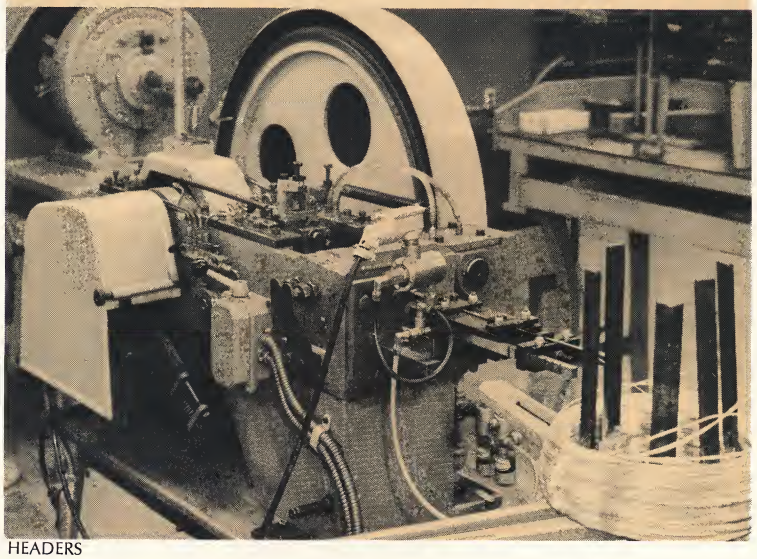
HEADERS. Our Header Department produces rivets for relay components to customer specifications, as well as many special rivet shapes.



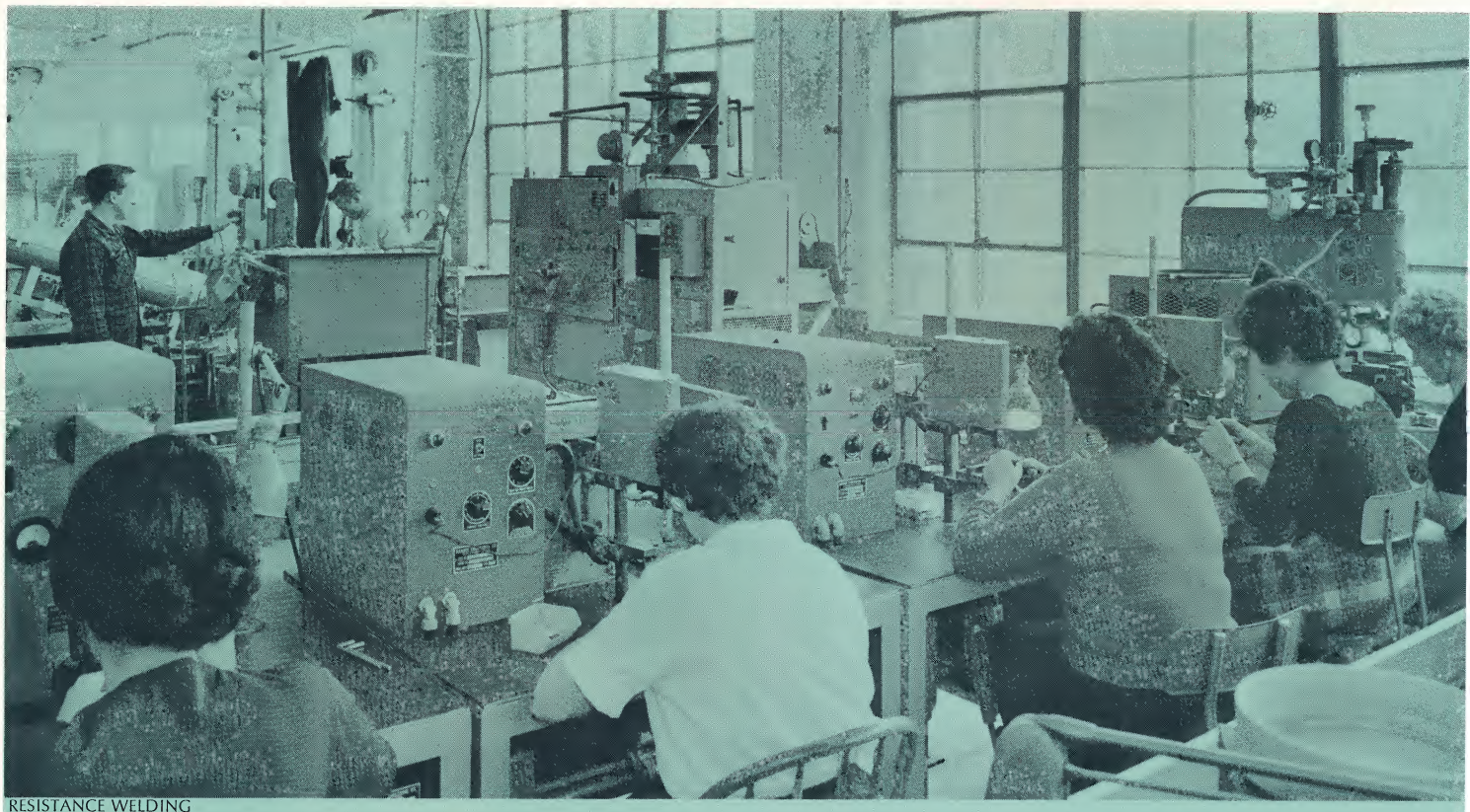
SCREW MACHINE DEPARTMENT



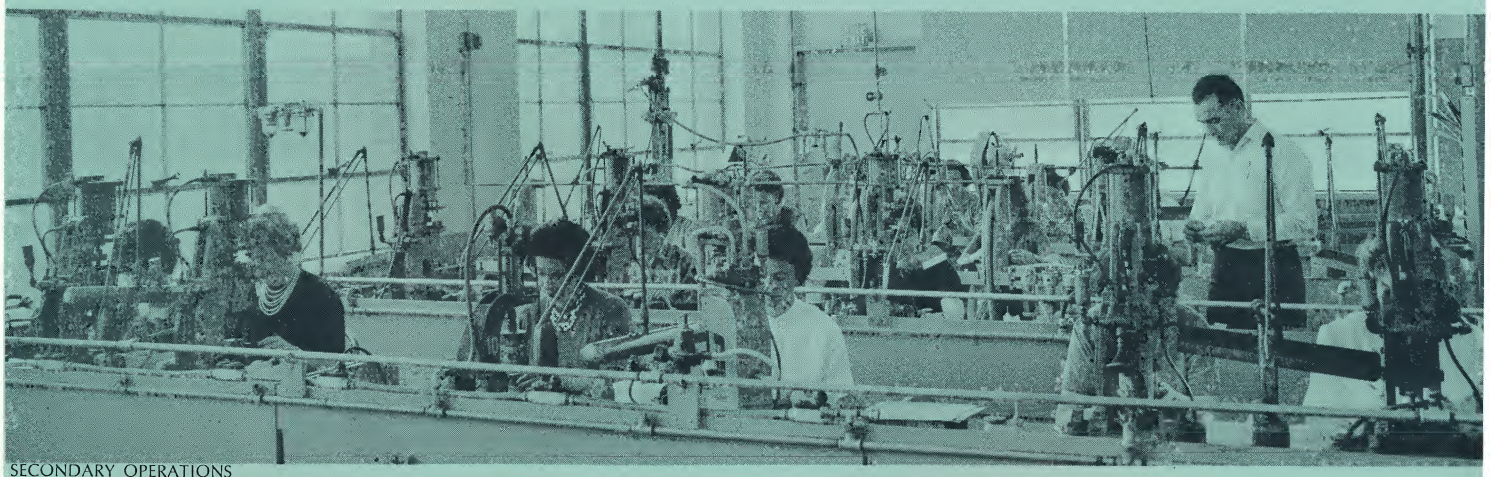
FOUR SLIDE MACHINE



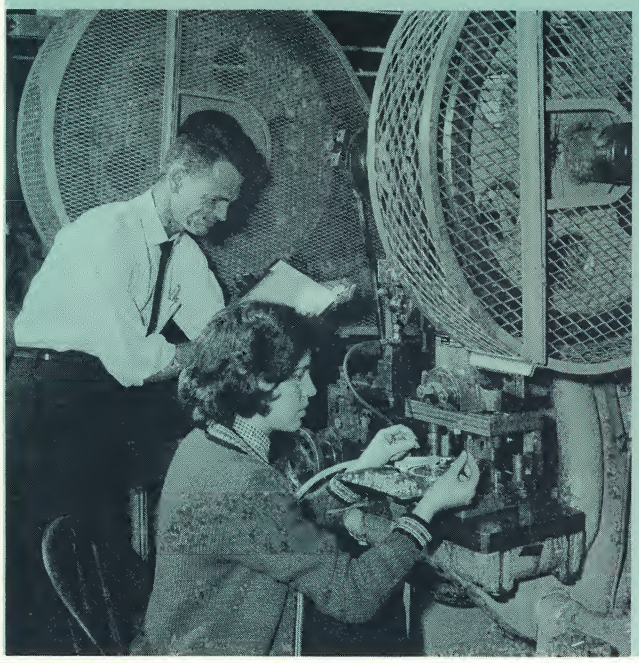
HEADERS



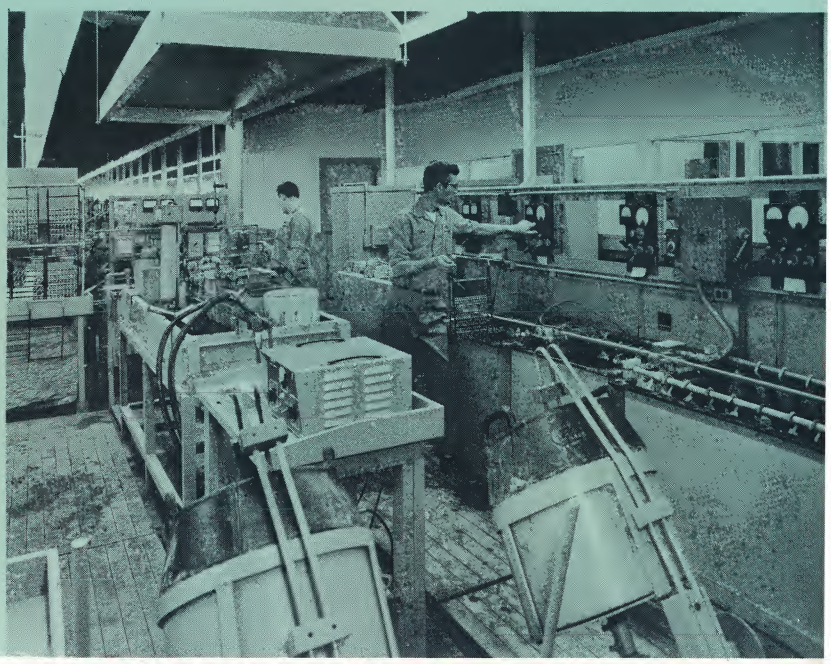
RESISTANCE WELDING



SECONDARY OPERATIONS



TIME STUDY



ELECTROPLATING

RESISTANCE WELDING. A bank of inertial and resistance welders meets the smallest to largest welding needs of the micro relay and contact field. At the rear is shown part of an extensive age hardening and annealing department where alloys are heat treated to meet special requirements.

SECONDARY OPERATIONS. Complicated parts are completed using a wide variety of equipment from special hand forming jigs to light, rapid action air presses.

TIME STUDY. Efficiency of design and operational speeds are often improved through time study with the resulting re-evaluation frequently effecting cost saving.

ELECTROPLATING. Small parts often require precious metal electroplating. Our extensive facilities offer controlled plating of Nickel, Copper, Gold, Silver and Rhodium.

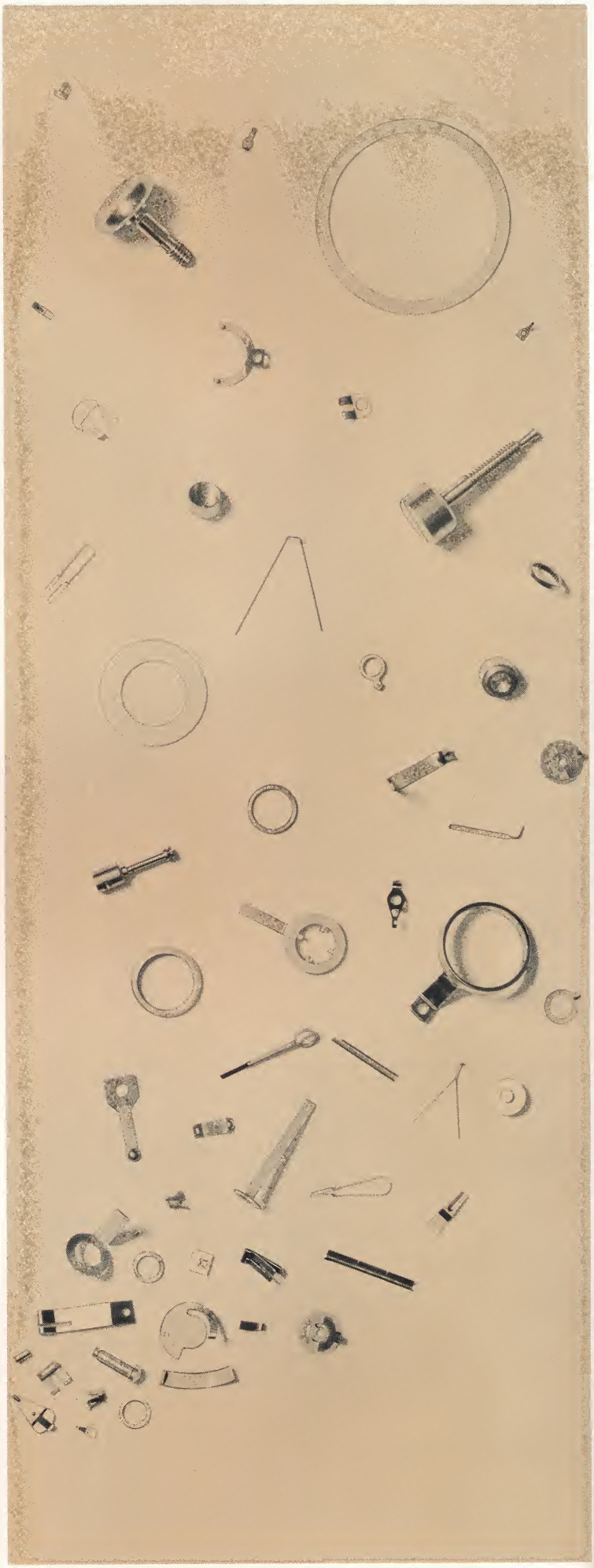
INSPECTION. The final ingredient for customer satisfaction is uncompromising inspection of in-process and finished parts. The entire manufacturing process fails if each part does not meet the customer's specifications. Working with minutely accurate instruments and inflexible standards, carefully trained and qualified inspectors check dimensions, configurations, gauges, forms and tempers.

INSPECTION

Throughout this booklet we have tried to tell you a story pictorially . . . a story of "Melting Pot to the Finished Part."

The parts shown here are but a few of the thousands of shapes and designs that we have custom produced for a nationwide clientele.

Our management staff and skilled craftsmen can do for you what we have done for others. Whether it's sheet, wire or tubing from Leach & Garner Company or precision fabrications from General Findings Inc., we will put these extensive facilities at your disposal.



For over half a century we have been extremely fortunate in enjoying steady growth and leadership in the field of precious metal processing. With this record of success as a firm foundation, we will continue to expand and modernize our manufacturing, engineering and sales facilities to meet the needs of our most valued assets . . . our present and future customers.

WE INVITE YOUR INQUIRIES. This pictorial tour is the next best thing to an actual visit to our factory from which you would gain additional insight from personal observation and discussions with our team. Until we can welcome you in person then . . . thanks for coming along.

TECHNICAL DATA SHEETS. Informative sheets on both materials and fabricated miniature parts are available.

LEACH & GARNER COMPANY

GENERAL FINDINGS INC.

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